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| 10/572,572 | 10/18/2006 | Mats Svensson | 0110-101 | 2846 |

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| EXAMINER |
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VERDERAMO III, RALPH

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| ART UNIT | PAPER NUMBER |
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2186

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09/25/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

tammy@ppglaw.com

| | | | |
|------------------------------|---|---------------------------------------|--|
| Office Action Summary | Application No. 10/572,572 | Applicant(s) SVENSSON, MATS | |
| | Examiner RALPH A. VERDERAMO III | Art Unit 2186 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2006 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/29/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 11 and 21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claims describe that the destination position is the total number of memory location divided by 2 and added to the index of the first position divided by 2 if the index of the first position is odd. Since the total number of memory locations is an even number the result of $\text{total}/2$ will be an integer but since the index of the first position is odd in this case the result of $\text{index}/2$ is not going to be an integer so the final result will also not be an integer. For example if the index was 3 and the total number of locations was 6 it would look like: $(6/2) + (3/2) = 3 + 1.5 = 4.5$. This result would not provide an appropriate index number. Furthermore the specification and drawings (page 16 and FIG. 7) both describe the same equation $(\text{LENGTH}/2 + \text{POS}/2)$. It is therefore unclear to the Examiner, or one of ordinary skill in the art, how the destination position is determined when the result for an odd index is always going to be fractional.
3. Claims 11 and 21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

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which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims describe that the destination position is the total number of memory location divided by 2 and added to the index of the first position divided by 2 if the index of the first position is odd. Since the total number of memory locations is an even number the result of $\text{total}/2$ will be an integer but since the index of the first position is odd in this case the result of $\text{index}/2$ is not going to be an integer so the final result will also not be an integer. For example if the index was 3 and the total number of locations was 6 it would look like: $(6/2) + (3/2) = 3 + 1.5 = 4.5$. This result would not provide an appropriate index number. Furthermore the specification and drawings (page 16 and FIG. 7) both describe the same equation $(\text{LENGTH}/2 + \text{POS}/2)$. So while the same equation is described in the specification it is unclear to the Examiner, or one of ordinary skill in the art, how the destination position is determined when the result for an odd index is always going to be fractional.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 11 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims describe that the destination position is the total number of memory location divided by 2 and added to the index of the first position divided by 2 if the index of the first position is odd. Since the total number of memory locations is an even number the result of $\text{total}/2$ will be an integer but since the

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index of the first position is odd in this case the result of $\text{index}/2$ is not going to be an integer so the final result will also not be an integer. For example if the index was 3 and the total number of locations was 6 it would look like: $(6/2) + (3/2) = 3 + 1.5 = 4.5$. This result would not provide an appropriate index number. Furthermore the specification and drawings (page 16 and FIG. 7) both describe the same equation ($\text{LENGTH}/2 + \text{POS}/2$). So while the same equation is described in the specification it is unclear to the Examiner, or one of ordinary skill in the art, how the destination position is determined when the result for an odd index is always going to be fractional.

6. Claim 7 recites the limitation "the two first data items" in lines 1 and 2. There is insufficient antecedent basis for this limitation in the claim. Claim 7 depends from claim 5 which depends from claim 1 and none of those claims mention "two first data items".

7. Claim 8 recites the limitation "the two first data items" in line 2. There is insufficient antecedent basis for this limitation in the claim. Claim 8 depends from claim 5 which depends from claim 1 and none of those claims mention "two first data items".

8. Claim 18 recites the limitation "the two first data items" in line 2. There is insufficient antecedent basis for this limitation in the claim. Claim 18 depends from claim 16 which depends from claim 12 and none of those claims mention "two first data items".

9. Claim 19 recites the limitation "said at least one incorrectly stored data item" in line 7. There is insufficient antecedent basis for this limitation in the claim. Previously the term "at least one incorrectly positioned data item" was used.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1 – 6, 9 and 10 rejected under 35 U.S.C. 102(b) as being anticipated by “In-Place Reordering of Data using a Double Buffer” IBM Technical Disclosure Bulletin (herein after referred to as IBM TDB).

Regarding claim 1, IBM TDB describes a deinterleaving method for processing data, comprising: sorting a sequence of data items from a first order to a second order (Figure 2 shows that the sequence starts in a first order (C D B F A E) and is sorted into a second order (A B C D E F)); withdrawing at least a first data item having a first position from said sequence (Item A is withdrawn, Figure 2); determining a destination position for said withdrawn data item within said sequence (It was determined that item A should be in the first position, indicated by the 1 in Figure 2); and determining whether said determined destination position contains any data item, if so replacing the data item of said determined destination position with the withdrawn data item, otherwise inserting the first data item at said determined destination position (The first position

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contained data item C and it was replaced with data item A as can be seen in Figure 2).

Regarding claim 2, IBM TDB describes the deinterleaving method according to claim 1 (see above), wherein the destination position is calculated based on the index of the first position and the number of data items of said sequence (As can be seen in FIG. 2 there are index numbers provided and a total number of data items in the sequence).

Regarding claim 3, IBM TDB describes the deinterleaving method according to claim 1 (see above), wherein two data items are repositioned in each sequence of steps (From the first presented order in FIG. 2 (C D B F A E) to the next presented order (A D B F – E, with C in the buffer) two data items are repositioned (A to its correct placement and C to the buffer)).

Regarding claim 4, IBM TDB describes the deinterleaving method according to claim 1 (see above), wherein the method is an in-place method carried out within a memory having a set of memory locations (If sufficient memory is not available to move every record to a new location, the records have to be reordered in place (Page 2)).

Regarding claim 5, IBM TDB describes the method according to claim 1 (see above), wherein said sequence comprises an even number of data items (The sorted sequence of FIG. 2 comprises A B C D E F, 6 data items, which is an even number), and wherein the number of data items relating to a first set of data items of said sequence is equal to the number of data items relating to a second

set of data items of said sequence (The number of data items in the first half of the sequence in FIG. 2 ,A B C, is equal to the number of data items in the second half of the sequence, D E F).

Regarding claim 6, IBM TDB describes the deinterleaving method according to claim 1 (see above), wherein data items relating to a first and a second set of data items, respectively, are arranged alternating in said sequence before sorted, and wherein the data items when sorted within said sequence are grouped into consecutive data items having consecutive positions (Before being sorted are not sorted, C D B F A E (FIG. 2). When the sequence is sorted the data items appear consecutively, A B C D E F (FIG. 2)).

Regarding claim 9, IBM TDB describes the deinterleaving method according to claim 1 (see above), further comprising the steps of: if the destination position contains no data item, determining at least one incorrectly positioned data item to reposition; and repositioning said at least one incorrectly positioned data item (In the step that moves data item E from its original position to its correct position (destination position), the correct position does not contain a data item. The remaining incorrectly positioned data item F is then located and placed in its correct position (FIG. 2)).

Regarding claim 10, IBM TDB describes the deinterleaving method according to claim 9 (see above), wherein the position of the at least one incorrectly positioned data item to be repositioned is determined as: the position preceding a first destination position, which did not contain any data item; and/or

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the position following a second destination position, which did not contain any data item (Data item F is selected to be repositioned after data item E fills in a hole (FIG. 2)).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over IBM TDB in view of Ohbuchi et al. US Patent No. 6971050 (herein after referred to as Ohbuchi).

Regarding claim 7, IBM TDB describes the deinterleaving method according to claim 5 (see above). IBM TDB does not specifically describe wherein the two first data items to be repositioned in the same repositioning sequence are selected as one data item relating to each of the first and second

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sets of data items, and wherein said two first data items are selected as any other data items than the first and last data items of the sequence.

Ohbuchi shows an interleaved pattern in FIG. 31 in which the first and last data items remain in the correct positions. If such an interleaved pattern were used the items being selected to be moved would not be the first or the last since they are already in the correct positions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have used an interleaved pattern as shown in Ohbuchi in the invention described by IBM TDB because Ohbuchi shows that this is one possible interleaving pattern that could be used to interleave data (FIG. 31).

Regarding claim 8, IBM TDB describes the deinterleaving method according to claim 5 (see above). IBM TDB does not specifically describe wherein the two first data items to be repositioned are selected as the data items stored at the center positions of said sequence.

Ohbuchi shows an interleaved pattern in FIG. 31 in which the first and last data items remain in the correct positions. If such an interleaved pattern were used the items being selected to be moved would not be the first or the last since they are already in the correct positions. The limitation "center positions" is rather broad and is believed to be covered by any position that isn't one of the ends. Therefore since the ends cannot be selected in this pattern since they are already in the correct position whatever items are selected could be considered part of the center positions.

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It would have been obvious to one of ordinary skill in the art at the time of the invention to have used an interleaved pattern as shown in Ohbuchi in the invention described by IBM TDB because Ohbuchi shows that this is one possible interleaving pattern that could be used to interleave data (FIG. 31).

15. Claims 12 – 16, 19, 20 and 22 – 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over IBM TDB.

Regarding claims 12 and 22, IBM TDB describes a deinterleaving method for processing data, comprising: sorting a sequence of data items from a first order to a second order (Figure 2 shows that the sequence starts in a first order (C D B F A E) and is sorted into a second order (A B C D E F)); withdrawing at least a first data item having a first position from said sequence (Item A is withdrawn, Figure 2); determining a destination position for said withdrawn data item within said sequence (It was determined that item A should be in the first position, indicated by the 1 in Figure 2); and determining whether said determined destination position contains any data item, if so replacing the data item of said determined destination position with the withdrawn data item, otherwise inserting the first data item at said determined destination position (The first position contained data item C and it was replaced with data item A as can be seen in Figure 2). Furthermore IBM TDB does disclose using a memory (If sufficient memory is not available to move... (page 96)) and a buffer (Two record buffer (page 96)). IBM TDB does not specifically describe that the method is accomplished using a processor to sort the data items. This also reads on an

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electronic apparatus (processor, memory, buffer, etc.) for rendering a sequence of interleaved data items, comprising a deinterleaving device for sorting data items according to claim 12 (processor and other computer components that accomplish the method can be viewed as a deinterleaving device).

Examiner takes official notice to the fact that processors are commonly used to accomplish tasks related to methods executed by a computer.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have used a processor to execute the method described in IBM TDB because processors are commonly used to access memory and do calculations.

Regarding claim 13, IBM TDB describes the deinterleaving device according to claim 12 (see above), wherein the processor is adapted to calculate the destination position based on the index of the first position and the number of data items of said sequence (As can be seen in FIG. 2 there are index numbers provided and a total number of data items in the sequence).

Regarding claim 14, IBM TDB describes the deinterleaving device according to claim 12 (see above), wherein the processor is adapted to reposition two data items in each repositioning sequence (From the first presented order in FIG. 2 (C D B F A E) to the next presented order (A D B F – E, with C in the buffer) two data items are repositioned (A to its correct placement and C to the buffer)).

Regarding claim 15, IBM TDB describes the deinterleaving device according to claim 12 (see above) the repositioning of data items is done in-place in said memory (If sufficient memory is not available to move every record to a new location, the records have to be reordered in place (Page 2)). IBM TDB does not specifically describe wherein the processor comprises a register file. Examiner takes official notice that processors contain register files.

Regarding claim 16, IBM TDB describes the deinterleaving device according to claim 12 (see above), wherein said memory comprises an even number of memory locations (The sorted sequence of FIG. 2 comprises A B C D E F, 6 data items, which is an even number).

Regarding claim 19, IBM TDB describes the deinterleaving device according to claim 12 (see above), further adapted to: if the destination position contains no data item, determine whether all data items of said sequence are positioned at their correct memory locations; if any data item is stored at an incorrect memory location, determine at least one incorrectly positioned data item to reposition; and reposition said at least one incorrectly stored data item (In the step that moves data item E from its original position to its correct position (destination position), the correct position does not contain a data item. The remaining incorrectly positioned data item F is then located and placed in its correct position (FIG. 2)).

Regarding claim 20, IBM TDB describes the deinterleaving device according to claim 19 (see above), wherein the memory location of the at least

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one incorrectly stored data item to reposition is determined as: the memory location preceding a first destination memory location, which did not contain any data item; and/or the memory location following a second destination memory location, which did not contain any data item (Data item F is selected to be repositioned after data item E fills in a hole (FIG. 2)).

Regarding claim 23, IBM TDB describes the apparatus according to claim 22 (see above). While it is not specifically described wherein the apparatus is a mobile radio terminal, a personal digital assistant, a pager, a smartphone, communicator, an electronic organizer, or a multimedia player for rendering digital multimedia files, Examiner takes official notice to the fact that smartphones or cell phones are well known and conventional in the art.

Regarding claim 24, IBM TDB describes the apparatus according to claim 22 (see above). While it is not specifically described wherein the apparatus is a mobile telephone, Examiner takes official notice to the fact that mobile telephones or cell phones are well known and conventional in the art.

Regarding claim 25, IBM TDB describes the method according to claim 1 when run by an electronic device having digital computer processing capabilities. While IBM TDB does not specifically describe a computer program product embodied on a computer readable medium, comprising computer readable instructions to carry out the method according to claim 1 when run by an electronic device having digital computer processing capabilities, Examiner takes

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official notice to the fact that computer readable medium are commonly used in order to store computer programs that can be later run by a computer processor.

16. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over IBM TDB in view of Ohbuchi.

Regarding claim 17, IBM TDB describes the deinterleaving device according to claim 14 (see above). IBM TDB does not specifically describe wherein the processor is adapted to select the two first data items to be repositioned in the same repositioning sequence as one data item relating to each of a first and a second set of data items, and select said two first data items as any other data item than the first and the last data items of the sequence.

Ohbuchi shows an interleaved pattern in FIG. 31 in which the first and last data items remain in the correct positions. If such an interleaved pattern were used the items being selected to be moved would not be the first or the last since they are already in the correct positions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have used an interleaved pattern as shown in Ohbuchi in the invention described by IBM TDB because Ohbuchi shows that this is one possible interleaving pattern that could be used to interleave data (FIG. 31).

Regarding claim 18, IBM TDB describes the deinterleaving device according to claim 16 (see above). IBM TDB does not specifically describe wherein the processor is adapted to select the two first data items to be

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repositioned as the data items stored at the center memory locations of the memory.

Ohbuchi shows an interleaved pattern in FIG. 31 in which the first and last data items remain in the correct positions. If such an interleaved pattern were used the items being selected to be moved would not be the first or the last since they are already in the correct positions. The limitation "center positions" is rather broad and is believed to be covered by any position that isn't one of the ends. Therefore since the ends cannot be selected in this pattern since they are already in the correct position whatever items are selected could be considered part of the center positions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have used an interleaved pattern as shown in Ohbuchi in the invention described by IBM TDB because Ohbuchi shows that this is one possible interleaving pattern that could be used to interleave data (FIG. 31).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RALPH A. VERDERAMO III whose telephone number is (571)270-1174. The examiner can normally be reached on M-Th 7:30 - 5, every other Friday 7:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ralph A Verderamo III/
Examiner, Art Unit 2186

/Matt Kim/
Supervisory Patent Examiner, Art
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September 21, 2009